



Fort Clatsop Small Mammal Inventory, 2001

Natural Resource Technical Report NPS/NCCN/NRTR—2009/171



ON THE COVER

Microtus townsendii (Townsend's vole) captured during the inventory
Photograph by: Courtesy of NPS files

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Introduction

Fort Clatsop National Memorial (FOCL) identified the desire for a small mammal inventory during a natural resource information needs assessment mandated by the Natural Resource Challenge (NRC). The NRC was established in 1999 as a means of identifying natural resource inventory data needs and a means of funding the necessary office and field work to address those information gaps. The North Coast and Cascades Network (NCCN) is one of 32 organizational units that have been established to guide the implementation of the NRC, and consists of 7 NPS units: Fort Clatsop National Memorial, Ebey's Landing National Historical Reserve, San Juan Island National Historic Park, Fort Vancouver National Historic Site, Olympic National Park, North Cascades National Park, and Mount Rainier National Park. The small mammal inventory completed at FOCL was one of several other vertebrate inventories completed in other NPS units by the NCCN during 2001, including: amphibian, fish, bat, and forest carnivore studies.

The field work at FOCL was completed between May 20 and June 1, 2001 by field crews that had worked at Mt. Rainier N.P. in the late winter and spring doing forest carnivore surveys. In addition to trapping for small mammals, suitable bat habitats were also sampled. Earlier small mammal inventories completed at FOCL in 1940 and 1993-1995 had been used to compile a list of 36 documented mammal species that helped guide efforts during 2001.

Methods

Small mammals were sampled in 5 different study areas within FOCL using Sherman live traps (Table 1, Figure 1, and Appendix 1). One 7 x 7 seven trapping grid and 11 trapping transects were used to distribute trapping stations in the five different habitat types: Freshwater wetland, saltwater wetland, disturbed oldfield, regenerating even-aged, mixed conifer, and mixed conifer/hardwood edge along saltwater marsh. Spacing between trapping stations was 10 m in both the trapping grid and trapping transects, and 2 traps were placed at each station. Traps were opened and baited at dusk with peanuts and rolled oats and a cotton ball was provided for insulation in an attempt to reduce mortality of shrews. Traps were checked at dawn and captures were identified to species when possible and sexed, aged, weighed, and marked to permit recognition of recaptured animals. Notes regarding deaths, injuries, parasitism, and deformities were also noted.

Table 1. Summary of trapping site data.

Site	Sample type	Habitat type	Station ID's	Dates	# of stations	# of nights	Trap nights
Alder Creek Marsh	Transect	Fresh water wetland	X1-X7 Y1-Y10 Z1-Z4	5/22 – 5/25	21	4	84
Burn Shed Slough	Transect	Salt water wetland	Y1-Y7 Z1-Z7	5/29 – 6/01	14	4	56
Log Yards	Transect	Disturbed oldfield	A1-A10 B1-B10 C1-C10 D1-D10 E1-E10	5/29 – 6/01	50	4	200
NW Corner	Grid	Regenerating even-aged mixed-conifer forest	A1-G7	5/20 – 5/25	49	6	294
South Park Dike	Transect	Mixed conifer and hardwood edge along salt water wetland	F1-F10	5/29 – 6/01	10	4	40
TOTALS	--			5/20 – 6/01	144	22	674

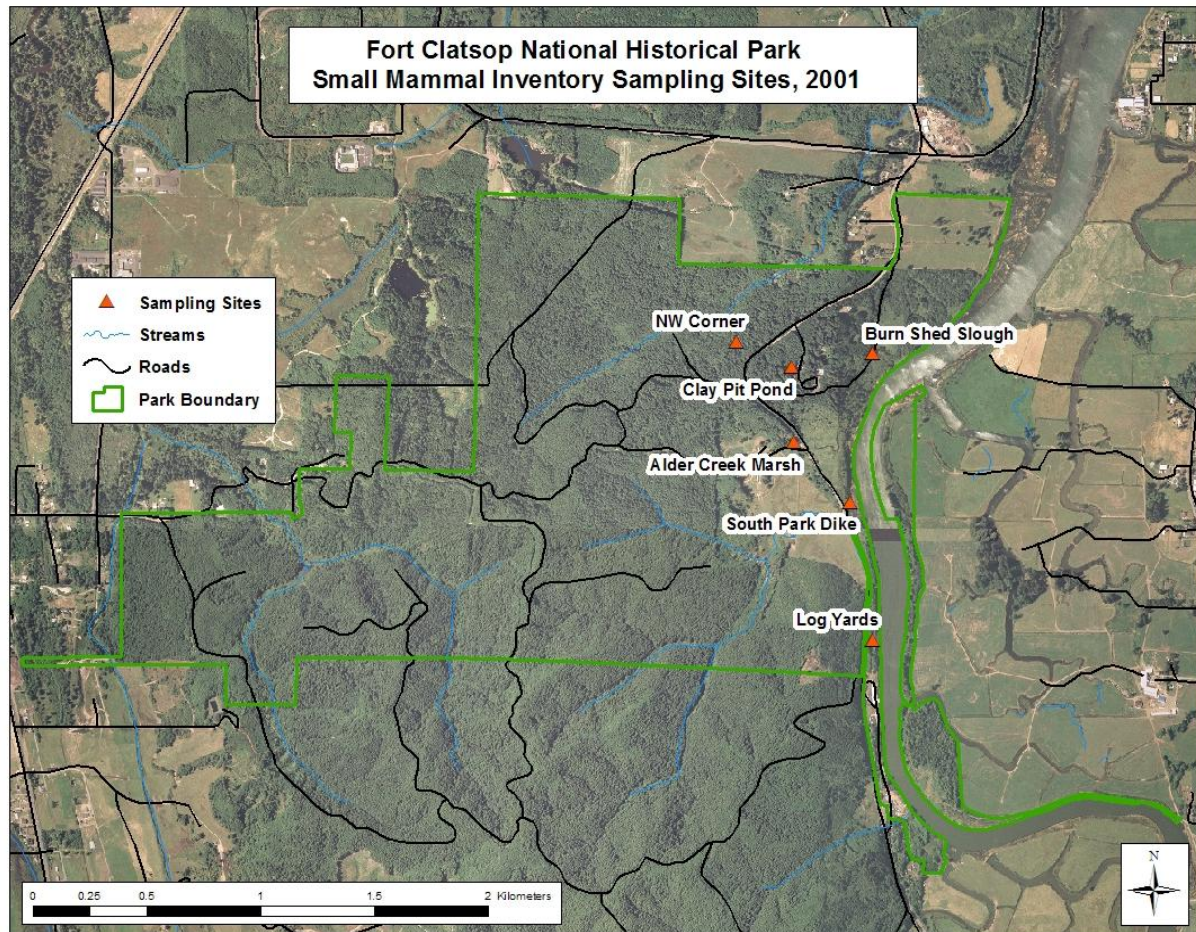


Figure 1. Sampling locations for live trapping and for mist netting*.

*Clay Pit Pond

Bats were studied during the evenings of May 19 and 20 by setting mist nets across the one suitable trapping site at Clay Pit Pond, and using Anabat ultrasonic acoustic recording equipment at Clay Pit Pond, Canoe Landing, adjacent to the Fort Replica, and at the Salt Marsh along the Loop Road. Captured bats were identified to species, sexed, aged, weighed, and released.

Results

A total of 418 captures representing 242 individual animals of 9 species of small mammals were documented as a result of the study (Table 2-3). In addition, the long-eared bat was the only bat captured. Capture rates varied between 0.45 and 0.7 animals/trap-night. Species diversity of small mammals varied between 3 and 6 species per site. Twenty trapping mortalities, mostly shrews, occurred during the study.

Creeping vole	<i>Microtus oregoni</i>
Townsend's vole	<i>Microtus townsendii</i>
Short-tailed weasel	<i>Mustela erminea</i>
American shrew-mole	<i>Neurotrichus gibbsii</i>
Deer mouse	<i>Peromyscus maniculatus</i>
Trowbridge's shrew	<i>Sorex trowbridgii</i>
Vagrant shrew	<i>Sorex vagrans</i>
Douglas' squirrel	<i>Tamiasciurus douglasii</i>
Pacific jumping mouse	<i>Zapus trinotatus</i>
Long-eared bat	<i>Myotis evotis</i>

Table 2. Summary of site-specific trapping data for all species combined

Site	Unique species	Total captures	Trap nights	Captures/trap-nights	Unique individuals	Recaptures	Deaths	# of non-mammals
Alder Creek Marsh	3	55	84	0.66	30	25	12	2
Burn Shed Slough	4	25	56	0.45	19	6	4	0
Log Yards	6	135	200	0.68	80	55	1	1
NW Corner	4	175	294	0.60	93	82	3	2
South Park Dike	3	28	40	0.7	20	8	0	0
TOTALS	9	418	674	0.62	242	176	20	5

Table 3. Trapping data separated by species for all sites combined

Species	Total captures	Unique individuals	Recaptures	Deaths	# of captures by sex		
					M	F	U
MIOR – <i>Microtus oregoni</i>	3	3	0	1	1	1	1
MITO - <i>Microtus townsendii</i>	1	1	0	0	1	0	0
MUER – <i>Mustela erminea</i>	1	1	0	1	0	0	1
NEGI – <i>Neurotrichus gibbsii</i>	1	1	0	0	0	0	1
PEMA – <i>Peromyscus maniculatus</i>	361	193	168	1	103	89	1
SOTR – <i>Sorex trowbridgii</i>	8	5	3	2	0	3	2
SOVA - <i>Sorex vagrans</i>	33	31	2	14	0	4	27
TADO – <i>Tamiasciurus douglasii</i>	1	1	0	0	0	0	1
ZATR – <i>Zapus trinotatus</i>	9	6	3	1	4	0	2
TOTALS	418	242	176	20	109	97	36

The deer mouse was by far the most abundant species trapped at each site (Tables 4-8) and accounted for ca. 86% of the total numbers of animals trapped. Sex ratios were quite evenly matched at most sites, with slightly more males than females being captured. The Log Yard site was the most ecologically disturbed site, as evidenced by the numerous exotic plant species and early seral stages, yet yielded the highest species diversity, with 6 species being documented. The highest abundance of deer mice were documented in the regenerating, mixed conifer forests in the NW corner of the park.

Table 4. Trapping data separated by species for Alder Creek Marsh

Species	Total captures	Unique individuals	Recaptures	Mortalities	# of captures by sex		
					M	F	U
MIOR							
MITO							
MUER							
NEGI							
PEMA	41	17	24	1	9	8	0
SOTR							
SOVA	13	12	1	10	0	0	12
TADO							
ZATR	1	1	0	1	1	0	0
TOTALS	55	30	25	12	10	8	12

Table 5. Trapping data separated by species for Burn Shed Slough

Species	Total captures	Unique individuals	Recaptures	Mortalities	# of captures by sex		
					M	F	U
MIOR							
MITO	1	1	0	0	1	0	0
MUER	1	1	0	1	0	0	1
NEGI							
PEMA	14	11	3	0	5	6	0
SOTR							
SOVA	6	6	0	3	0	1	5
TADO							
ZATR							
TOTALS	22	19	3	4	6	7	6

Table 6. Trapping data separated by species for Log Yards

Species	Total captures	Unique individuals	Recaptures	Mortalities	# of captures by sex		
					M	F	U
MIOR	1	1	0	0	1	0	0
MITO							
MUER							
NEGI	1	1	0	0	0	0	1
PEMA	106	58	48	0	35	23	0
SOTR	5	2	3	0	0	3	2
SOVA	14	13	1	1	0	3	10
TADO							
ZATR	8	5	3	0	3	0	2
TOTALS	135	80	55	1	39	29	15

Table 7. Trapping data separated by species for NW Corner

Species	Total captures	Unique individuals	Recaptures	Mortalities	# of captures by sex		
					M	F	U
MIOR	1	1	0	1	0	0	1
MITO							
MUER							
NEGI							
PEMA	171	89	82	0	43	45	1
SOTR	2	2	0	2	0	1	1
SOVA							
TADO	1	1	0	0	0	0	1
ZATR							
TOTALS	175	93	82	3	43	46	4

Table 8. Trapping data separated by species for South Park Dike

Species	Total captures	Unique individuals	Recaptures	Mortalities	# of captures by sex		
					M	F	U
MIOR	1	1	0	0	1	0	0
MITO							
MUER							
NEGI							
PEMA	26	18	8	0	11	7	0
SOTR	1	1	0	0	0	0	1
SOVA							
TADO							
ZATR							
TOTALS	28	20	8	0	12	7	1

Bat activity appeared to be quite low, as demonstrated by the acoustic recording data, with less than 10 activity passes being recorded each night. The only site suitable for capturing bats with mist nets, the Clay Pit Pond, had low activity each night, but did result in one adult male long-eared *Myotis evotis* being caught on May 19. This capture was noteworthy because it was the first time this species had been positively documented at FOCL.

Discussion/Summary

Of the 43 species of mammals noted in the FOCL Park-Species List as of May 2001, 33 of them could be considered as being “small mammals.” This study was successful in documenting 10 of these species, including one previously unknown from the park, the long-eared bat, and one species that had not been verified since a 1940 museum voucher had been obtained, the creeping vole. The other 8 species were more common and were previously documented in the 1993-95 small mammal inventories.

The species richness varied from 3 to 6 species per site while the sites with the highest capture rates were areas with the most highly disturbed plant communities. These sites contained many species of exotic plants and were recovering from relatively recent disturbance. The second growth mixed conifer site in the NW Corner yielded 4 species of small mammals and had the highest number of captures, but 171 of 175 captures were deer mice.

It appears that at this time, the numbers of additional species of nonvolant small mammals that could be expected to be documented with additional inventory effort is reaching a point of diminishing returns. The studies conducted between 1993 and 1995 yielded a wealth of information, and while this current study did manage to add to the list of documented small mammals, my opinion is that the best source of new verifications could be expected if a more intense effort took place targeting bats. This is because 4 other bat species with ranges expected to include FOCL are known from the vicinity of the park (little brown bat, Western long-eared bat, big brown bat, and silver-haired bat). The low bat activity demonstrated during the study may have been the result of the early seasonal timing of the fieldwork. Had the study been conducted later in the summer, higher bat activity would be expected.

Appendix 1. Sampling site location coordinates (UTM Nad27).

Location	UTM Easting	UTM Northing
Alder Creek Marsh	432000	5108860
Burn Shed Slough	432350	5109250
Log Yards	432350	5108000
NW Corner	431750	5109300
South Park Dike	432250	5108600
Clay Pit Pond	431990	5109190

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